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BEETLE HAZARD IN WINDTHROWN DOUGLAS-FIR

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The windthrow in Douglas-fir, caused by the November 1958 storm, is generally infested with Douglas-fir beetle. The broods from this year's beetle attacks will emerge from the blowdown in April and May of 1960, and create a serious threat to adjacent green timber. Removing infested trees from the woods prior to April of 1960 will do much to reduce this threat. Information on the blowdown-barkbeetle relationship was obtained from a cooperative study with the Division of Forest Insect Research of the Pacific Northwest Forest and Range Experiment Station of the U. S. Forest Service. A preliminary report of findings is given below.

The main objective of the study is to determine what type of windthrow produces the most beetles. Such information should be helpful to forest managers in setting priorities for logging the tremendous amount of infested blowdown now present in southwest Washington. Data were collected from trees located on the St. Helens, Vail, and McDonald Tree Farms in western Washington. Of primary interest was the brood survival in four classes of

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windthrow -- i.e., old growth shaded, old growth exposed, second growth shaded and second growth exposed. Analysis of data showed highly significant differences in the number of beetles surviving in the above classes of material. The following table presents average values for Douglas-fir beetle attacks and brood survival in windthrown Douglas-fir trees sampled in southwestern Washington.

Class of Windthrown trees	Douglas-fir beetles in log				Windthrown tree size		
	Attacks per sq. ft.	Brood survival Sept. 1, 1959			D.B.H. Ave.	Ht. Ave.	Scribner volume Ave.
		Top	Side	Ave.			
	no.	pct.	pct.	pct.	in.	ft.	bd. ft.
Old growth shaded	0.73	35	43	39	60	211	8100
Old growth exposed	.51	25	27	26	51	198	5700
Second growth shaded	1.00	35	35	35	25	150	910
Second growth exposed	.42	7	18	12	26	149	960
All types	.66	25	31	28	40	177	3900

Second growth exposed to the direct rays of the sun produced about one-third as many beetles per gallery as shaded second growth. In addition, the attacks were less than half as numerous, thus making them even less productive. Unless over-wintering mortality brings about a reversal in the above situation, it is evident that shaded old growth and second growth should be given the highest logging priority, whereas second growth exposed along cutting lines could be delayed until next summer if necessary. Exposed old growth produces nearly as many beetles as does the shaded and would be intermediate in priority.

Information from the present study should be regarded as applying only to southwest Washington and northwest Oregon areas. In southern Oregon, the warmer climate has been observed to dry out exposed windthrown material to the extent that very few beetles are produced. In contrast, northern Washington areas may allow greater beetle production, even in the most exposed thin-barked trees. Further information from the present study will be released following observations and analysis on over-wintering brood mortality in the various classes of windthrow.

Although the greatest damage is expected in 1960, and perhaps 1961, some tree-killing by the Douglas-fir beetle has already occurred this year. This was caused by beetles that were attracted to heavy blowdown areas and attacked green trees still standing among the windthrow. The foliage on these trees is still green but will turn red late this fall or early next spring. These trees now contain beetle broods which will fly next April or May. When logging is done in areas of blowdown, a sharp lookout should be kept for standing infested trees so they can be removed along with the down material. Evidences of infestation in green trees are the beetle boring dust in the bark crevices, and off-color foliage.

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